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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,450	03/15/2004	Emmanuel Hadji	33019US1	1230
116	7590	07/27/2004	EXAMINER	
PEARNE & GORDON LLP 1801 EAST 9TH STREET SUITE 1200 CLEVELAND, OH 44114-3108			LUU, CHUONG A	
			ART UNIT	PAPER NUMBER
			2825	

DATE MAILED: 07/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/800,450

Applicant(s)

HADJI ET AL.

OK

Examiner

Chuong A Luu

Art Unit

2825

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/673,005.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/15/04</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

PRIOR ART REJECTION

Statutory Basis

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The Rejections

Claims 1-2 are rejected under 35 U.S.C. 102(e) as being anticipated by Bowers et al (5,985,687).

Bowers discloses a method for bonding a silicon block with a support (See Figures 1-2).

Bowers inherently teaches that silicon substrate or silicon block is covered with silicon oxide because silicon substrate includes some degree of oxide layer on it.

Bowers also discloses that after fusion or bonding the silicon substrate is thinner using polishing and then forced to cleave parallel to the crystal planes of the substrate (see column 5, lines 26-34 and column 6, lines 3-21).

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bowers et al (5,985,687) in view of Ohmura et al. (4,848,272).

Bowers teaches the outlined features above in the paragraph 7 but fail to disclose to increase the thickness by crystalline growth. It would have been obvious to one skilled in the art to increase the thickness if the thickness is less than the predetermined thickness and furthermore, crystalline growth is conventional technique to form an epitaxial layer on a silicon substrate as supported by Ohmura. Ohmura teaches that crystalline growth is conventional to provide a high quality thin film having uniform thickness over a semiconductor substrate (see column 1, lines 10-14 and column 2, lines 3-7).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bowers et al (5,985,687) in view of Bruel (5,374,564).

Bowers teaches everything above in the paragraph 7 but fail to disclose that the cleavage area is formed using hydrogen implantation. However, Bruel discloses that hydrogen implantation is advantageously used to a silicon substrate in order to promote

Art Unit: 2825

the breaking process (column 5, lines 29-45). Therefore, it would have been obvious to one skilled in the art at the time of claimed invention to combine Bruel's teaching into Bowers' process for promoting the breaking process of the silicon block or silicon substrate.

Claims 5-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ramdani et al (5,835,521) in view of Bowers et al (5,985,687).

Ramdani discloses a bragg mirror structure (10) including alternating layers of silicon oxide and a silicon material utilizing epitaxial growth technique and /or wafer bonding. As to claim 6, Ramdani teaches that silicon oxide layer is formed by standard epitaxial growth technique including CVD or PECVD technique (see column 3, lines 18-25).

Ramdani also discloses that an optical component is formed by fabricating a vertical cavity surface emitting laser or active region on the bragg mirror (see column 3, lines 9-55). Ramdani et al also teach that a second mirror (42) is disposed over the active region (see column 6, lines 4-24).

Ramdani fails to teach the formation of silicon layer as the context of claim 1 namely bonding a silicon block with a support, cleaving the silicon block and thinning the surface layer to a desired thickness. However, Bowers et al disclose a method for bonding a silicon block with a support (see Figures 1-2). Bowers inherently teaches that silicon substrate or silicon block is covered with silicon oxide because silicon substrate includes some degree of oxide layer on it.

Bowers also discloses that after fusion or bonding the silicon substrate is thinned using polishing and then forced to cleave parallel to the crystal planes of the substrate for providing a desired thickness for the mirror (see column 5, lines 26-34 and column 6, lines 3-21).

Therefore, it would have been obvious to one skilled in the art at the time of claimed invention to combine Bowers et al's teaching into Ramdani's process for providing predetermined thickness of the silicon layer for the mirror as taught by Bowers.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chuong A Luu whose telephone number is (571) 272-1902. The examiner can normally be reached on M-F (6:30-3:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


CAL
July 26, 2004


CARIDAD EVERHART
PRIMARY EXAMINER